REMARKS

Reconsideration of the above-identified patent application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-80 are in this case. Claims 41-80 were withdrawn by the Examiner from consideration as drawn to a non-elected invention. Claims 1-40 have been rejected under § 103(a). Independent claim 1 and dependent claims 3-5 and 11 have been amended.

Specifically, independent claim 1 has been amended to include the limitations of claim 2 as filed. Correspondingly, claim 2 has been canceled and claims 3-5 and 11 have been amended to depend directly from claim 1.

The claims now before the Examiner are directed toward an interface adapter for a packet network.

In one embodiment of the present invention, the interface adapter includes a memory interface, a plurality of execution engines, a scheduling processor, a plurality of gather engines and switching circuitry. The memory interface is coupled to a memory. The execution engines read, from the memory via the memory interface, work items that have been assigned to them by the scheduling processor, and generate corresponding gather entries. The switching circuitry couples the execution engines to the gather engines so that the gather engines receive the gather entries from the execution engines and generate corresponding packets. Each work item belongs to a respective one of several transport service instances. The scheduling processor assigns the work items to the execution engines by selecting the respective transport service instances for service.

In another embodiment of the present invention, the interface adapter includes a memory interface, a plurality of execution engines, a scheduling processor and a

send data unit. The memory interface is coupled to a memory in which are stored work items belonging to transport service instances that are assigned to respective classes of service. The execution engines read the work items from the memory via the memory interface and generate corresponding gather entries. The scheduling processor maintains scheduling queues of the transport service instances according to the respective classes of service of the transport service instances, and selects transport service instances from the heads of the queues for servicing by the execution engines. The send data unit generates packets responsive to the gather entries.

§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004

The Examiner has rejected claims 1-8, 10-14, 17, 22, 24-26, 28-31, 34 and 37 under § 103(a) as being unpatentable over Tzeng et al., US Patent No. 6,912,604 (henceforth, "Tzeng et al. '604") in view of Gasbarro et al., US Patent No. 6,948,004 (henceforth, "Gasbarro et al. '004"). The Examiner's rejection is respectfully traversed.

Claim 2 has been canceled, thereby rendering moot the Examiner's rejection of this claim.

]Tzeng et al. '604 teach a host channel adapter (HCA) **12**, for sending packets on an InfiniBand™ network **10**, in which some link layer operations are performed before the transport layer operations and the rest of the link layer operations are performed after the transport layer operations. Specifically, host channel adapter **12** includes a pre-link module **40**, a transport service module **42** and a post-link module **44**. Pre-link module **40** receives work queue elements (WQEs) from a host and stores the WQEs in a WQE FIFO **50**. A pre-link process module **54** assigns WQEs from WQE FIFO **50** to virtual lane FIFOs **52** according to the WQEs' service levels. A VL arbitration module **60** sends WQEs from virtual lane FIFOs **52** to transport service

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module **42** according to the respective priorities of virtual lane FIFOs **52**. Transport service module **42** matches up the WQEs with the corresponding queue pairs (QPs) and sends the WQEs to post-link module **44** that generates the corresponding packets.

Briefly, as noted in the responses filed July 16, 2006 and October 27, 2006 to the Office Action mailed January 17, 2006, the difference between the teachings of Tzeng et al. '604 and the present invention as recited in independent claims 1 and 28 is that Tzeng et al. '604 perform service level classification of WQEs, whereas the present invention performs service level classification of QPs (or, more generally, of transport service instances). HCA **12** of Tzeng et al. '604 receives WQEs from the host, classifies the WQEs according to service level, matches up WQEs with QPs and generates corresponding packets. The present invention receives transport service instances from the host, classifies the transport service instances according to service level (preferably in schedule queues), matches up transport service instances with WQEs (or, more generally, with work items) in execution engines, and generates the corresponding packets in gather engines.

The Examiner has identified the "execution engines" recited in claims 1 and 28 with submodules **68** of transport service module **42** of Tzeng et al. '604, and now has cited Gasbarro et al. '004 as teaching the coupling of the execution engines to the memory interface to read the work items (WQEs), as recited in claims 1 and 28. Even assuming for the sake of argument that this feature of claims 1 and 28 is indeed taught by Gasbarro et al. '004, claims 1 and 28 nevertheless are not obvious from the Examiner's proposed combination of Tzeng et al. '604 and Gasbarro et al. '004. In order for claims 1 and 28 to be unpatentable over the Examiner's proposed combination of Tzeng et al. '604 and Gasbarro et al. '004, these references must teach

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or suggest every recited limitation. As the Board of Patent Appeal and Interferences

has recently confirmed in *In re Wada and Murphy*, Appeal 2007-3733,

> When determining whether a claim is obvious, an examiner must make "a searching comparison of the claimed invention — *including all its limitations* — within the teaching of the prior art". *In re Orchiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, "Obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

But Gasbarro et al. '004, like Tzeng et al. '604, fails to teach, hint or suggest

assigning work items to execution engines by selecting the work items' transport

service instances for service, as recited in claim 1 as now amended. Similarly,

Gasbarro et al. '004, like Tzeng et al. '604, fails to teach, hint or suggest selecting

transport service instances for assignment to execution engines, according to classes

of service, for generation of gather entries responsive to work items, as recited in

claim 28.

Applicant notes in passing that column 6 lines 16-40, that the Examiner cited

as teaching the limitations of claim 2 that now have been included in claim 1 by

amendment, actually teaches the actions of a queue pair management module **66** that

is part of transport service module **42**. Hence, everything done by queue pair

management module **66** to a WQE is done *after* pre-link process module **54** has

assigned the WQE to a virtual lane FIFO **52** according to the WQE's service level and

so has nothing to do with assigning a work item to an execution engines by selecting

the work item's transport instance for service, as recited in claim 1 as now amended.

With independent claims 1 and 28 allowable in their present form it follows

that claims 3-8, 10-14, 17, 22, 24-26, 29-31, 34 and 37 that depend therefrom also are

allowable.

§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Pettey et al. '712

The Examiner has rejected claims 9, 27 and 32 under § 103(a) as being unpatentable over Tzeng et al. '604 in view of "Gasbarro et al., US Patent No. 6,594,712" and further in view of Pettey et al., US Patent No. 6,594,712 (henceforth, "Pettey et al. '712"). Applicant presumes that the Examiner intended to reject claims 9, 27 and 32 as being unpatentable over Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Pettey et al., US Patent No. 6,594,712 (henceforth, "Pettey et al. '712"). The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claims 1 and 28 are allowable in their present form. It follows that claims 9, 27 and 32 that depend therefrom also are allowable.

§ 103(a) Rejections – Tzeng et al. '604 in view of AAPA

The Examiner has rejected claims 18 and 19 under § 103(a) as being unpatentable over Tzeng et al. '604 in view of Applicant's Admitted Prior Art. The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claim 1 is allowable in its present form. It follows that claims 18 and 19 that depend therefrom also are allowable.

§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Parthasarathy et al. '916

The Examiner has rejected claims 15, 20, 21, 23, 35, 36 and 38 under § 103(a) as being unpatentable over Tzeng et al. '604 in view "Gasbarro et al., US Patent No. 6,594,712" and further in view of Parthasarathy et al., US Patent No. 6,831,916 (henceforth, "Parthasarathy et al. '916"). Applicant presumes that the Examiner

intended to reject claims 15, 20, 21, 23, 35, 36 and 38 as being unpatentable over Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Parthasarathy et al. '916. The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claims 1 and 28 are allowable in their present form. It follows that claims 15, 20, 23, 35, 36 and 38 that depend therefrom also are allowable.

§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004, in view of Pettey et al. '712 and further in view o Parthasarathy et al. '916

The Examiner has rejected claim 33 under § 103(a) as being unpatentable over Tzeng et al. '604 in view of Gasbarro et al. '004, in view of Pettey et al. '712 and further in view of Parthasarathy et al. '916. The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claim 28 is allowable in its present form. It follows that claim 33 that depends therefrom also is allowable.

§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Grun '591

The Examiner has rejected claim 16 under § 103(a) as being unpatentable over Tzeng et al. '604 in view of "Gasbarro et al., US Patent No. 6,594,712" and further Grun, US Patent No. 6,272,591. Applicant presumes that the Examiner intended to reject claim 16 as being unpatentable over Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Grun, US Patent No. 6,272,591. The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claim 1 is allowable in its present form. It follows that claim 16 that depends therefrom also is allowable.
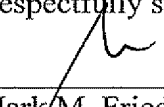
§ 103(a) Rejections – Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Snyder II et al. '830

The Examiner has rejected claims 39 and 40 under § 103(a) as being unpatentable over Tzeng et al. '604 in view of "Gasbarro et al., US Patent No. 6,594,712" and further in view of Snyder II et al., US Patent No. 6,888,830. The Examiner's rejection is respectfully traversed. Applicant presumes that the Examiner intended to reject claims 39 and 40 as being unpatentable over Tzeng et al. '604 in view of Gasbarro et al. '004 and further in view of Snyder II et al., US Patent No. 6,888,830. The Examiner's rejection is respectfully traversed.

It is demonstrated above that independent claim 28 is allowable in its present form. It follows that claims 39 and 40 that depend therefrom also are allowable.

In view of the above amendments and remarks it is respectfully submitted that independent claims 1 and 28, and hence dependent claims 3-27 and 29-40 are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

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Mark M. Friedman
Attorney for Applicant
Registration No. 33,883

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